

Evaluation of anatomy courses in the faculty of dentistry in line with the views of academic staff and exam performance of students

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Abstract

Aim: Basic medical sciences have an important place in the curriculum of faculties of dentistry, just as in all fields of science dealing with health. One of these is anatomy. In the Faculty of Dentistry at İnönü University, anatomy course is taught in parallel with the Faculty of Medicine. The aim of this study is to compare the exam performances of medical faculty and dentistry faculty students since the curriculum of anatomy course at İnönü University is taught by the same faculty members and also to learn the attitudes of instructors at the faculty of dentistry through a questionnaire.

Material and Methods: First, we compared the success rates of faculty of medicine and faculty of dentistry second year students in their anatomy practice exams during the academic years 2016-2017, 2017-2018 and 2018-2019. After, we conducted a study in which we asked the students to define anatomic structures on radiological images at the end of the academic year 2018-2019 when anatomy courses ended in both faculties. In the final stage of the study, we conducted a questionnaire for the instructors to get their opinions about the anatomy courses they received during their undergraduate education.

Results: In all but one of the end of the board exams which were conducted during the three academic years, the success percentage of dentistry faculty students were found to be lower than those of medical faculty students. In the study in which we asked about the anatomic structures through radiological images, the number of the correct answers given by dentistry faculty students was lower than the number of correct answers given by medical faculty students. We believe that the success rate of dentistry faculty students were low since they lost their interest in the course because they were learning information they thought they would not need all their lives long. 73.91% of the instructors think that they received anatomy education more than they needed for their profession, which supports our opinion.

Conclusion: We believe that it is wrong to follow the exact medical faculty curriculum in dentistry faculty for anatomy course.

Keywords: Anatomy education; curriculum; dentistry; exam performance

INTRODUCTION

Dentistry is a field of medicine that examines the head and neck region, oral cavity, teeth in the oral cavity, gums, jaw and adjacent tissues anatomically, physiologically and histologically and deals with diagnosis, treatment and rehabilitation methods to protect the health of all these tissues (1). Dentistry, which previously had a place in general medical education, has established its own discipline and built its institutional and established structure in time in parallel with the developments and advancements in all areas of science. It does not seem possible to speak of a curriculum unity related to anatomy education in faculties of dentistry both in developed countries and in our country (2). As in all health related fields of science, basic medical sciences have an important

place in the curriculum of the faculties of dentistry. One of these is anatomy, which examines the normal structure and organs of the human body, location of these organs and the relationship between them (3). Anatomy course is taught in the first years of undergraduate education in the faculties of dentistry as in the faculties of medicine and faculties of health sciences (4). In the faculties of dentistry, a curriculum parallel to faculty of medicine is followed (5). At Inonu University, Faculty of Dentistry, anatomy course is taught in parallel with the Faculty of Medicine. In addition to general anatomy courses, clinical anatomy and radiological anatomy courses of all systems taught in the Faculty of Medicine curriculum for clinical integration are also included in the curriculum of the Faculty of Dentistry. In the anatomy courses we teach in

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the Faculty of Dentistry, we see a serious decrease in the concentration and exam performances of the students. In this study, our aim is to examine the practice exam results of the students in the faculty of medicine and the faculty of dentistry for anatomy course which is taught with the same curriculum and by the same faculty members

at İnönü University and to examine the reasons for the differences in results. At the same time, another aim is to learn the approaches of faculty members who have experienced this process before with a questionnaire given to faculty members in the Faculty of Dentistry.

Table 1. Comparison of the commission success percentage of second year faculty of medicine and second year faculty of dentistry students in the academic years 2016-2017, 2017-2018, 2018-2019

| | Commission 1(%) Median (min-max) | | Commission 2(%) Median (min-max) | | Commission 3(%) Median (min-max) | | Commission 4(%) Median (min-max) | | Commission 5(%) Median (min-max) | |
|------------------|-------------------------------------|--------------------|-------------------------------------|--------------------|-------------------------------------|------------------|-------------------------------------|------------------|-------------------------------------|------------------|
| | FM | FD | FM | FD | FM | FD | FM | FD | FM | FD |
| 2016-2017 | 72.72 (0-100) | 41.17 (0-100) | 66.66 (0-100) | 0 (0-57.14) | 85 (0-100) | 36.36 (0-100) | 91.68 (0-100) | 43.18 (0-100) | 97.50 (0-100) | 73 (0-100) |
| | .000 | | .000 | | .000 | | .000 | | .000 | |
| 2017-2018 | 80.79 (0-100) | 32.5 (0-80) | 80.39 (0-100) | 18.75 (0-84.38) | 97.5 (0-100) | 44.44 (0-100) | 90 (0-100) | 45 (0-100) | 81.81 (0-100) | 70 (0-100) |
| | .000 | | .000 | | .000 | | .000 | | .000 | |
| 2018-2019 | 70.9 (0-100) | 63.63 (0-95.45) | 66.66 (0-100) | 66.66 (0-100) | 87.5 (0-100) | 70.58 (0-100) | 90 (0-100) | 55.55 (0-100) | 80 (0-100) | 73.33 (0-100) |
| | .004 | | .199 | | .000 | | .000 | | .000 | |

FM: Faculty of medicine, FD: Faculty of dentistry

Table 2. Comparison of the correct answers given by the students of both faculties in the study where we asked the anatomical structures in the radiological images

| | Total correct answers Median (min-max) | p |
|----------------------|--|------|
| Faculty of Medicine | 6 (0-20) | .001 |
| Faculty of Dentistry | 4 (1-14) | |

Table 3. The views of faculty members and research assistants about the anatomy courses they received in their undergraduate education

| | Disagree (%) | Undecided (%) | Agree (%) |
|--|--------------|---------------|-----------|
| The duration and content of the theoretical anatomy courses was long during my undergraduate education | 30.43 | 15.23 | 54.34 |
| The duration and content of the practical anatomy courses was long during my undergraduate education | 43.47 | 8.71 | 47.82 |
| It was beneficial for my professional life to have taken all systems anatomy course. | 56.52 | 23.91 | 19.57 |
| It was beneficial for my professional life to have taken the head and neck anatomy course | 0 | 6.53 | 93.47 |
| It was beneficial for my professional life to have taken the thorax anatomy course | 45.65 | 21.73 | 32.62 |
| It was beneficial for my professional life to have taken the abdomen anatomy course | 76.09 | 17.39 | 6.52 |
| It was beneficial for my professional life to have taken the upper extremity anatomy course | 63.04 | 32.60 | 4.36 |
| It was beneficial for my professional life to have taken the lower extremity anatomy course | 65.21 | 28.26 | 6.53 |
| It was beneficial for my professional life to have taken the digestive system anatomy course | 21.73 | 30.45 | 47.82 |
| It was beneficial for my professional life to have taken the respiratory and circulatory system anatomy course | 19.58 | 19.56 | 60.86 |
| It was beneficial for my professional life to have taken urogenital system anatomy course | 73.92 | 26.08 | 0 |
| It was beneficial for my professional life to have taken the nervous system anatomy course | 8.69 | 21.75 | 69.56 |
| I got enough anatomy education for my profession | 15.21 | 17.40 | 67.39 |
| I got more anatomy education than I need for my profession | 17.39 | 8.70 | 73.91 |
| Anatomy courses were waste of time for me | 69.56 | 19.58 | 10.86 |

MATERIALS AND METHODS

2019/396 decision numbered permission was taken from İnönü University Health Sciences Non-interventional Clinical Researches Ethical Board for our study. We conducted our study in three stages. First of all, for the anatomy course which is taught by the same faculty members with the same curriculum during 2016-2017, 2017-2018 and 2018-2019 academic years, we compared the success rates of second year faculty of medicine and faculty of dentistry students in practical exams made at the end of Commission-1 in which movement system anatomy is taught, Commission-2 in which respiratory-circulatory system anatomy is taught, Commission-3 in which digestive system anatomy is taught, Commission-4 in which nervous system anatomy is taught and Commission-5 in which urogenital system anatomy is taught. Anatomy practice exams are exams carried out on models in anatomy laboratory under the supervision of faculty members of the anatomy department with bell method. The reason why we chose practice exam for the study is the fact that it is not open for interpretation and it is an objective exam structured on the basis of student's knowing about the structures on the model. For this study, a total of 4388 practice exam papers, 1359 of which belonged to second year dentistry faculty students and 3029 of which belonged to medical faculty students, were evaluated.

In the second stage, we conducted a study at the end of 2018-2019 academic year after the anatomy courses ended in both faculties in order to evaluate the command of second year students on major anatomical structures in radiological images. In our university, at the end of each commission, the radiological anatomy course related to the system that was taught is taught by the faculty members of anatomy department to second year students of faculty of dentistry, as with the faculty of medicine. For this study, we made an appointment with the students of both faculties at different times. When the students arrived at the amphitheater at the time of appointment, they did not have any information about the study. After they were informed about the study, the students who did not want to participate left the amphitheater. 76 second year students from the faculty of dentistry and 168 second year students from the faculty of medicine participated in our study. We gave blank papers numbered from 1 to 20 to students who agreed to participate in the study. Next, we projected 20 radiological images to the projection screen with projector. We asked the students recessus costodiaphragmaticus and arcus aorta on posterior-anterior (PA) chest X-ray, 12. costa, art. sacroiliaca and proc. spinosus on direct abdominal X-ray in standing position, acromion on plain anterior-posterior (AP) shoulder radiograph, olecranon on elbow lateral radiograph, ventriculus lateralis on transverse plane cranial Computed Tomography (CT), aorta descendens on transverse plain thorax CT, pons and ventriculus quartus on median plane cranial Magnetic Resonance Imaging (MRI), sinus sphenoidalis on median plane cranial CT, malleolus medialis on ankle AP plain

radiography, os talus on ankle lateral plain radiography, tuber ischiadicum and symphysis pubis on pelvis AP plain radiography, concha nasalis inferior on coronal plane cranial CT, kidney on transverse plane abdomen CT, dens axis and os zygomaticum on Waters radiography. Anatomic structures we asked about consisted of major anatomical structures that we taught in lessons.

In the last stage, we formed a questionnaire to find out the views of faculty members and research assistants at İnönü University Faculty of Dentistry about the anatomy courses they received in their undergraduate education. 4 associate professors, 10 assistant professors and 32 research assistants participated in our study. Anatomy course parallel to the medical faculty has been carried out in faculties of dentistry since the past. Thus, we believe that the views of faculty members who have experienced these processes are important. A 5-Likert type (Totally disagree, disagree, undecided, totally agree, agree) grading scale was used for faculty members to express their level of agreeing with the items in the questionnaire. While evaluating the results, we generalized totally disagree and disagree options as disagree and totally agree and agree options as agree.

IBM SPSS Statistics 22.0 for Windows package program was used for the statistical analysis of the study. Mann-Whitney U test was used to compare the rate of success in the study conducted with radiological images and in the rate of success in course commissions. Normality distribution of the data was evaluated with Kolmogorov Smirnov test and it was found that the data were not normally distributed. The data were presented as median (min – max). Level of significance was accepted as 0.05 in all analyses.

RESULTS

In the anatomy practice exam at the end of Commission-2 in which circulatory-respiratory system anatomy was taught in 2018-2019 academic year, no statistically significant difference was found in the success percentages of second year faculty of dentistry and faculty of medicine students. Except this commission, in all commissions in three academic years, success percentages of second year faculty of dentistry students in anatomy practice exams were found to be statistically significantly lower than those of second year faculty of medicine students (Table 1). In the 20-question study we conducted to evaluate the command of students in both faculties on the anatomical structures in radiological images at the end of 2018-2019 academic year, the number of correct answers given by second year faculty of dentistry students were statistically significantly lower than those of second year medical faculty students (Table 2).

The results of the questionnaire that we formed for faculty members and research assistants at İnönü University Faculty of Dentistry to evaluate the anatomy course they received in their undergraduate education are seen in (Table 3). Most of them (%73.91) think that they have

received more than enough anatomy education for their professional life during their undergraduate education.

DISCUSSION

Higher education institutions, in other words universities, are at the top of our education system. Universities are the main institutions responsible for the production and distribution of knowledge (6). As in all institutions making production, quality production is one of the primary goals in universities that produce knowledge. Quality in education is an issue that should be considered in evaluating the results and in curriculum design in general. The issue of quality of education is neglected. Designing the process suitably will bring along quality (7). The goal of education is to create a conscious and planned learning environment to make changes in the behaviors of the individual in line with specific purposes. Information should be well-organized, sorted and ready to be received by the student (8). Today, student-centered approaches are accepted in the field of education (9). Learning does not take place if the student does not engage in an intellectual activity by associating the subject with the context he/she considers as meaningful (10). Learning is interrupted when the student is not interested in the subject or when he/she cannot find an answer to the question "what will this do for me?". After this stage, the student attempts to fulfill the learning task expected from him/her with the least problematic way and with minimum performance. Instead of learning the subject thoroughly, the student considers this as a must and learns superficially by memorizing (11). Anatomy is a difficult course for students due to its terminology and being a discipline they have not experienced in their previous education life. In addition to this, we believe that as a result of the curriculum of anatomy courses being the same in medical faculty and faculty of dentistry, faculty of dentistry students who are loaded with the information they won't use in any period of their lives lose their interest in the course. This situation causes both a loss of time and students of the faculty of dentistry not to get the information they really need as a result of low performance and concentration caused by the current situation. In a study conducted on the accreditation of faculties of dentistry in Turkey (12), it has been reported that the curriculum is highly loaded and a large number of subjects not related with dentistry are taught. In the same study, it is emphasized that basic science courses should be specific for dentistry. In another study (13), the significance of having a basic education program specific for dentistry is emphasized.

Academic achievement is an indicator of how much the student benefits from academic activities (14). The result of our study that achievement percentages of the students in the faculty of dentistry were low in all commissions except one cannot be explained only with the fact that students in the faculty of medicine are placed in the university with high scores. No differences were found in

the learning styles of the students in both faculties (15). We believe that the reason for this result depends on the fact that students lose their interest and concentration as a result of not finding answer to the question "what will this do for me?" as mentioned above.

The results of the questionnaire given to faculty members and research assistants also reflect the wish for an anatomy education specific for the faculty of dentistry. 45.65% of the faculty members think that thorax anatomy course does not provide them a professional benefit, while 76.08% think that abdomen anatomy, 63.04% think that upper extremity anatomy, 65.21% think that lower extremity anatomy and 73.91% think that urogenital system anatomy course does not provide them a professional benefit. However, 93.47% think that head-neck anatomy course is professionally beneficial, while 60.86% think that respiratory-circulatory system anatomy, 69.56% think that nervous system anatomy and 47.82% think that digestive system anatomy course is professionally beneficial for them. 56.52% stated that they believed having being taught the anatomy of all systems during their undergraduate education was not beneficial for their profession. 73.91% of the faculty members thought that they received more anatomy education than they needed for their profession. Although the percentages were different in a study conducted with the faculty members of Uşak University, it was found that faculty members stated it was beneficial for them to have taken the courses of head-neck anatomy, digestive system anatomy, nervous system anatomy and respiratory-circulatory system anatomy (16). In the same study, while faculty members gave similar opinions about whether it was beneficial or not for them to have received thorax anatomy, abdomen anatomy, upper extremity anatomy, lower extremity anatomy and urogenital system anatomy courses, the number of the participants who were undecided were higher when compared with our study. These feedbacks of faculty members are very important in terms of time management. Individuals' being successful in the activities they do basically depends on their using the time efficiently (17). They should efficiently plan what they can do during the time they have. Education is an expensive and high-cost process which is most of the time irreversible (18). Thus, the education process should not be filled with information that students won't use or with information that won't be useful for students.

Similarly, we believe that the reason why students of faculty of dentistry had low success rates in the study we conducted with radiological images results from the fact that they lost their interest in the radiological anatomy courses taught with imaging methods that they think they will never use.

As a result, we believe that a general anatomy course and then a detailed head-neck area anatomy course will be more beneficial for the students of the faculty of dentistry, as stated in the Basic Sciences Core Education Program

prepared by European Dental Education Association. We believe that it is wrong to follow the curriculum of the Faculty of Medicine exactly. Faculties of dentistry should have basic medical science branches of their own.

CONCLUSION

A course content prepared for medical faculty students by a faculty member who is not expert on oral and dental subjects will not contribute to the clinical development of students of the faculty of dentistry (19). However, until this goal is achieved, we believe that an anatomy education in which the problems found and solutions proposed with the study we conducted will be more beneficial for students.

Conflict of interest: The authors declare that they have no competing interest.

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